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ABSTRACT

The lack of a German language testing instrument for economic literacy has led to problems for researchers in German-speaking countries to establish the level of economic literacy in those countries. The translation of the 23rd edition (1987) of the Test of Economic Literacy (TEL) into a German version, known as the Wirtschalfliche Bildung Test (WBT), has enabled that research process to begin. The TEL was adapted for German-speaking students and the economic terms were translated with the goal of maintaining the subjective difficulty of the examination. Problems with intercultural differences caused several questions to be modified. Thirty-one experts at eight German-speaking universities, when asked to judge how well each question in the WBT would measure economic literacy, felt that the test does measure economic literacy, but more than half of them felt that essential aspects of economic literacy were not tested. Testing shows that just as the TEL discriminates between groups of students with different educational backgrounds in economics so does the WBT. A list of six references is included. (PPB)

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Economic Literacy in German Speaking Countries and the United States. First Steps to a Comparative Study[1]

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1 A paper presented at the annual meeting of AERA, San Francisco 1989

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1. Introduction

Several years ago some authors in the US stated that there is a problem with the economic literacy of the American people. E.g. George J. Dawson reports in 1975 from several studies that even simple economic questions could not be answered by many people (including high school teachers of social studies!). We can't tell the same for the German speaking countries. The reason is not that people in these countries possess a high standard of economic literacy but rather that we don't know anything about the state of economic knowledge of our populations.

We have the strong feeling that this situation should not be prolonged. Like the US we are faced with a lot of problems, e.g. pollution, unemployment, social difficulties which mostly have an economic impact and to which every individual contributes by his or her actions if only to a marginal extent. We hope that one of the outcomes of a higher standard of economic literacy is that more people are able to judge their own actions as a little but nevertheless a relevant contribution to the aggregated effects which they don't want to be confronted with.

We decided to follow the precedent set by our colleagues in the US: to measure first the extent of economic illiteracy in the German speaking countries. In the long run it could be of interest to be able to compare the outcomes of such an investigation between our countries not only because of academic curiosity but also to have informations about the effects of economic literacy on macro-economic outcomes, as well as the effects on the welfare of every individual.

Therefore we were glad to discover that in 1987 the 2nd edition of the Test of Economic Literacy (TEL) by Soper and Walstad was published. We are very grateful to **Bob Highsmith** who not only sent us a copy of this instrument but also encouraged us to do this work and also to **Bob Walstad** who provided us with important and interesting material. Though we have completed to date only the first steps, we are pleased to be able to report our findings and to discuss some problems.

What we have done and what we can describe is, **first**, the translation of the TEL, **second**, the analysis of data we collected to judge the quality of our German version which we call "Wirtschaftliche Bildung Test" (WBT) and, **third**, a short discussion of some results. These results are still rather uncertain but they allow a first glance at dimensions and directions of the information we expect to obtain when the comparison is completed.

A lot of things remain to be done and we regret that we can only present some initial indications of the level of economic literacy in our countries compared with the American sample for the norming of TEL. Also, we are not able to report sufficient data to allow a reliable comparison between Austria, Switzerland, and West Germany. One of the reasons for that is that our very first set of data showed some stramge features, e.g. negative discrimination scores which we couldn't interpret. So we had to reanalyze everything done to date - a procedure which was time consuming especially because of the distance between our living and working places which is some 400 miles. In between we have, as you'll see, better results with an expanded sample which is nevertheless too small to answer all questions of interest.

2. Problems of translation

2.1. The strategy

There are 77 different items on both forms of the TEL, 15 of them being anchor items which are contained in both forms A and B. As a **principle of adaptation** we decided to translate, as far as possible, **word by word** and **sentence by sentence**, and only to deviate from this strategy if unavoidable. The reason for this was that we intend to get comparable data and we would miss this aim if we had items with rather different sentence structures. As you know, the level of cognitive achievement necessary for solving a problem is, among others, a function of the complexity of the text structure in which it is presented.

On the other hand we had to change some typical constructions normally used in the American language but not familiar in our language. E.g. in German the **-ing-form** of verbs must sometimes be expressed with a whole sentence which makes the text structure objectively a little bit more complicated but is at the same time quite normal for German speaking people and seems to be compensated for by a gain in redundancy (cf. A 16 A, B 39). In this case we hope that the translation doesn't affect the subjective difficulty of the text.

Another problem is that we cannot always divide sentences in the same manner in one **pre-part** and several **post-parts** to permit multiple choices for a question. As in the American language sentence construction is following the SPO-rule, in German we are using the SOP-rule. So, if in an item the "O's" content the choice possibilities you can express the item text in English in good style but in German the same construction sounds more or less strange and would therefore need some more cognitive processes to be reconstructed in an understandable way. In cases like that we sometimes had to rearrange the answers into a form which is not equal but, as we hope, equivalent to the original TEL-text (cf. A 4, A 13, B 20, B 29).

In following this strategy, which we describe short by the expression "as literally as possible, as free as necessary" we produced two translations for both forms of the test, one in Nuernberg, West-Germany, and one in Salzburg, Austria.[2] Both groups worked independent from each other. Then the results were exchanged and compared. It turned out that the differences were not very great regarding the sentence structure problems. However we had to struggle with greater difficulties in the transfer of some economic constructs which means the transfer of the scientific terminology. More about that is reported in the next sections. The differences in the grammatical construction of sentences were discussed between both groups and then resolved by agreement on one of the proposals. In some cases we found by the discussion a third solution.

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2 This work was done with the help from Patricia Rieche, Nuernberg, Lolli Gurtner, Romana Schiller, Elfi Wessenmeyer, Salzburg.

2.2. Lexicographic problems

As just mentioned, one main point of concern was the translation of the economic terms. The sense of the test items and the correctness of the solutions depend strongly on a very careful handling of this problem. Though there are some dictionaries in the field of economics, we also asked some colleagues in the economic department of the University of Nuernberg who are specialists in comparative economics to check the WBT with respect to this point.[3]

There were, for example, some difficulties with the meaning of "residential property tax" (A 24 D) for which we have no defined term in the German science of economics. The same is true for "margin requirements" (A 35 B). In both cases we kept the sense of the original text in the process of translation. But we must remember the fact that our people are not used to reflecting on these concepts as Americans does. Looking at the distributions of percentage responses on these two items you can see that the two pairs of patterns show a remarkable difference.

Item	TEL					WBT				
	A	B	C	D	bl	A	B	C	D	bl
A 24	14	12	60*	13	1	28	14	49*	6	3
A 35	21	24	33*	20	2	16	14	43*	18	9

Tab. 2-1: Percentages of response to items A 24 and A 35

We cannot exclude the possibility that the reason stems partly from the fact just mentioned.

Another dimension of the language problem becomes visible if one looks at those concepts which are used as foreign words in the German scientific terminology stemming from the American language. For example we use in German the term "Opportunitätskosten" for the word "opportunity cost" (cf. A 2) and "komparativer Vorteil" for "comparative advantage" (cf. A 40). So, for the less educated German speaking people these words are strange because they have no meaning in colloquial speech. If you are one of those who have a little but not an extensive knowledge about economics and if you are an American native speaker you might have a chance to find the correct answer for the item concerned on the basis of your common sense understanding of such a term. But there is no equivalent opportunity for the non-American speaker.

On the other hand it makes no sense in these cases to try to find a translation based on colloquial German speech because in this case the well-educated person with good knowledge in economics would never understand what is meant by such a translation. So we decided to keep the foreign language term but also to remember this fact when we collect data on the difficulty of these items.

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3 We thank Dr. K.-D. Grueske, N. Leineweber, and W. Heinzmann for their help.

Actually we found only slight differences in the response patterns of the TEL and the WBT:

Item	TEL					WBT				
	A	B	C	D	bl	A	B	C	D	bl
A 2	7	15	24	53*	1	16	15	15	49*	5
A 40	15	22	50*	12	2	10	17	53*	12	8

Tab. 2-2: Percentages of response to item A2 and A40

But looking at the differences between the American group "without economics" and the German speaking group with a lower level of economics education and also a lower level of time spent at school one can see that students might have had a problem with foreign words. The discrimination scores for both groups are, respectively:

Item	TEL	WBT
A 2	36.1	15.9
A 40	41.9	36.4

Tab. 2-3: Discrimination scores for item A 2 and A 40

2.3. Problems with intercultural differences

No doubt the differences between our countries with respect to their cultures are not very great. In Europe we are used to say that it takes about five years until the new American ideas are imported and imitated by the greater parts of our population. But there remain many uniquenesses e.g. in **school systems** or **legislation** or **ethnic population patterns** etc. So we had to deal with the problem of cultural differences in this wide sense of the word. For example Sandy Smith who is "Sabine Schmidt" in German (cf. Item A 5) in our countries does not have the choice of taking a job paying $ 10.000.- a year (we usually compare salaries on a monthly basis) and going to a college which costs $ 5.000.- a year (schools in our countries are at this level normally free). Nevertheless, we kept the sense of this item too and adapted it only to our education system speaking of an apprenticeship as a hair stylist and of a private school for economic education which is not often but yet sometimes found in our countries.

Another example: The **labor unions** in our countries play a rather different role in economic conflicts and are organized in another way than they are in the US. So "effective labor unions" which is a distractor in Item A 7 has in German another meaning and therefore our people think of other facts when they read this text.

Item A 7
Which of the following is the most essential for a market economy?

A. Effective labor unions.
B. Good government regulation.
C. Responsible action by business leaders.
D. Active competition in the marketplace.

Tab. 2-4: Item A 7 in the TEL

In this case we could keep the formulation because the different facts the readers are thinking of are both incorrect with respect to the question put.

Similar but more serious problems with the term "labor unions" arise within item A 11 where the special understanding of function of US-labor unions is asked for.

Item A 11
Labor unions in the United States have

A. **improved the bargaining position of unionized workers with their employers.**
B. greatly increased wages of union workers compared to nonunion workers.
C. organized a majority of the American labor force.
D. increased competition in the labor market.

Tab. 2-5: Item A 11 in the TEL

Here we had to decide whether to keep the literal sense of the question and ask German speaking people something about the conditions in the US, or whether to substitute this item with an analogous one asking for the functions of labor unions in our countries. Our solution for this item was to delete the reference to the United States in the pre-part of the sentence and to ask for the functions of labor unions in general. We found a reformulation for distractor C which now states that the working time of union workers was shortened compared to the working time of nonunion workers by the labor unions.

It's not possible to discuss all such problems here, but two further examples may be mentioned. In Item A 15 and A 21 the question text resp. the answer refers to the **"minimum wages law"** which we don't have in our countries. And in Item A/B 17 the TEL speaks about baseball, a sport which is not very popular with us and in which you can't get a lot of money. In this last case we decided to substitute **baseball** with tennis which became very popular in Europe in the last years. But we are nevertheless not sure whether our kids and young people thinking of tennis have the same connotations as their peers in the US and if not what that means for the individual chance to find the correct answer.

Problems of this "cultural type" arise in the following items: A 5, 11, 15, 17, 20, 30, 31, 43, 44; B 2, 17, 18, 31, 43, 44.

2.4. Problems with cognitive reference areas

There are some items on the TEL which speak about the US or make references on other countries. E.g. item A 1: "When the United States trades wheat to Saudi Arabia in exchange for oil ..." or in Item A 44 which focuses on appreciation of different currencies. As already mentioned above, the problem with these items is that we have to take into account that the **connotations** which arise in the minds of people tested are somewhat different and therefore influence their answers. This does not only mean that there may be differences in the cognitive dimension which e.g. are based on the fact that it could be easier to know "everything" about such a little country as Austria, Switzerland, or West-Germany, whereas the US-citizen has to think about more facts and relations when he or she is looking at the very complex situation which is connected with the name "United States".

The other point is that we have to reflect on the fact that the attitudes associated with the name of one's mother country (we say in German "father country"!) may be very different between our populations and may interfere with the process of actualizing the relevant knowledge. E.g. we can say that the average citizen of Switzerland is very proud to be a member of his society, whereas the things are more difficult in West-Germany and Austria where often the opposite may be true, and in the US where you may find more and harder contrasts in the attitudes associated with the name of the mother land. Beeing asked, what's the best to do for your own country under an economic aspect, those attitudes may interfere with the reproduction of economic knowledge. Again, we don't know what the effects of these differences are, but we feel that they should be thought about in interpreting the different results of administering the TEL and the WBT.

2.5. Special problems

In the process of translating we discovered some difficulties in the formulation of items. We are not sure whether these difficulties arise only in the German version or whether they are already hidden in the original TEL. E.g. look at Item A 2:

The opportunity cost of a new public high school is the

A. money cost of hiring teachers for the new school.
B. cost of constructing the new school at a later date.
C. change in the annual tax rate to pay for the new school.
D. other goods and services that must be given up to build the new school.

Tab. 2-6: Item A 2 in the TEL

The first part of this statement focuses the attention on the meaning of the term "opportunity cost" which is defining a special kind of costs. Consequently, answer A and B offer different sources of costs corresponding with the example used. But C and D don't contain the term cost. C is speaking about some "change" which might be a hidden signal for the wrongness of this distractor reducing its chance for being selected. And D, the correct answer, doesn't use the term cost either - a fact which, at least in the WBT, leads to a formulation which doesn't sound correct because "goods and services" are not the same as "costs". Besides that the grammatical construction of D is not a correct completion of the initial phrase.

Or think of Item B 40:

Which of the following best describes what the law of comparative advantage means for the trading nations? Each trading nation can benefit by selling those goods

A. that it produces at high opportunity costs and buying those goods it would produce at low opportunity costs.
B. **that it produces at low opportunity costs and buying those goods it would produce at high opportunity costs.**
C. that people enjoy least, while buying goods that they enjoy most.
D. at comparative prices and buying others at comparative prices.

Tab. 2-7: Item B 40 in the TEL

Here the correct answer is B. It shows the same grammatical structure as A and C in completing the preceding part of the sentence. We felt that the distractor D is not very good because there is no special reference term for "those goods". At least, in the WBT the answer D doesn't match very well with the first part of the whole answer. Another problem with this item lies in the distractor C. In our opinion it is not clear enough whether the people mentioned here are the people of a special trading nation or all people in general, again with the consequence that for this distractor the probability to be chosen goes down. Again, we were therefore not very surprised that the percentage of responses for these two distractors is rather low: 19% and 16% in the TEL, 16% and 22% in the WBT.

A third and last point should be mentioned here. It's Item B 46 which caused some difficulties for the translation, more precisely, answer A.

Item B 46
Rapidly growing economies usually have a

A. slow rate of inflation.
B. **high rate of investment.**
C. low rate of population growth.
D. high rate of population growth.

Tab. 2-8: Item B 46 in the TEL

In German economic terminology we can speak of a "low rate of inflation" but not of a "slow rate of inflation". We confess that for a short moment we were not sure whether this formulation was only a mistake in the TEL because with "low" as the first word of distractor A the answers A to D would show the pattern "low"-"high"-"low"-"high" at their beginnings. But then we learned that you also can - shortly - speak of "slow rates". So for a better comparison we kept the word "slow" in the WBT, hoping that the tested persons would produce the appropriate cognitive associations. Looking at our results, we are now not quite certain about the effect of this problem:

Item B 46

	A	B	C	D	bl
TEL	18	40*	12	26	4
WBT	15	60*	7	13	5

Tab. 2-9: Percentages of response to item B 46

For this and the other problems mentioned above we'll have to do special investigations to get better knowledge about the height and the direction of the influence on results caused by translation.

3. The Formal Similarity between the TEL and the WBT

As was mentioned in Section 1, we were concerned in the first step of the study with the translation of the TEL so that the WBT would be as similar as possible. The WBT is supposed to gather the same kind of information in German-speaking countries as the TEL is supposed to validly measure in the USA, namely, economic literacy.

Which characteristics can lead one to conclude that these goals have been reached? We looked for criteria for similarity or comparability on two levels:

1. on the level of the **instrument per se**
2. on the level of that **which the TEL and the WBT measure**

	A		B	
	TEL	WBT	TEL	WBT
Cronbach's Alpha	.87	.86	.88	.88
Std. Dev. of mean	8.45	7.87	8.85	8.28
Std. error of meas.	3.06	2.87	3.04	2.80
average Item-Total-Correlation (Median)	.32	.38	.34	.44
No of higher Discr.	16	30	12	34
Number of Dimensions in Factor Analyses	1	1	1	1

Tab. 3-1: Comparative aggregate statistics for the TEL (Soper/Walstad 1987, 12) and the WBT (only students with courses in economics)[4]

From a (formal) perspective the two instruments are adequately similar. However, this unfortunately only indicates that they only fulfill the necessary requirements for any given instrument of measurement. This similarity is, of course, not sufficient. For that reason we would like to now discuss the aspect of validity.

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4 This work was done with the help from H. Astleitner, Dr. G. Haider, Salzburg and Chr. Sczesny, A. Mann, Nuernberg.

4. The content similarity of the TEL and the WBT

4.1. Economic literacy in the TEL

The TEL is based on the following content-cognitive matrix:

Content Categories	Cognitive Level					No. of Questions	Percent
	I	II	III	IV	V		
Fundamental Economic Concepts						12	26.1
1. Scarcity		25, 3				2	
2. Opportunity cost/trade-offs			2, 4	5		3	
3. Productivity		6			8	2	
4. Economic systems	7					1	
5. Economic institutions & incentives	9	11				2	
6. Exchange, money, & interdependence	12		1			2	
Microeconomic Economic Concepts						13	28.3
7. Markets & prices		10	13			2	
8. Supply & demand	14		15, 16		17	4	
9. Competition & market structure			18, 19			2	
10. Income distribution	20	21				2	
11. Market failures				22	23	2	
12. Role of government		24				1	
Macroeconomic Economic Concepts						13	28.3
13. Gross national product	26					1	
14. Aggregate supply		27				1	
15. Aggregate demand		28		29		2	
16. Unemployment				30		1	
17. Inflation & deflation				31, 32		2	
18. Monetary policy		34	35		38	3	
19. Fiscal policy	36			33, 37		3	
International Economic Concepts						8	17.4
20. Comparative advantage/barriers to trade		39	40	41		3	
21. Balance of payments & exchange rates	42			43, 44		3	
22. International growth & stability		45, 46				2	
Total No. Of Questions	8	13	10	11	4	46	
Percent of Total	17.4	28.3	21.7	23.9	8.7		100

Tab. 4-1: Content-Cognitive Matrix: TEL Form A

The cognitive levels are defined by Bloom (1979) and are not of interest here. The content concepts are from the Master Curriculum Guide: A Framework for Teaching Economics: Basic Concepts. (Source: TEL 1987, 3).

It is therefore not surprising that the content validity appears to have been rated positively by the ten-member National Advisory Committee of prominent economists.[5] "Economic literacy" is therefore

5 Unfortunately neither qualitative nor quantitative data were found on the experts' ratings or their suggestions for improvement.

understood by test authors as well as by the Advisory Committee to be that which the TEL measures.[6]

4.2. Economic literacy in the WBT

The approach taken by the TEL authors suggested that the content validity of the WBT also be assessed by experts. We asked the following question to experts at six German, one Swiss and one Austrian university:

"Please judge...each test item on how well or how poorly it seems to you to be an indicator of economic literacy (among 18 year-olds)."

We would need to write an entire paper to present the results in detail. Here, we will have to limit ourselves to the following findings:

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6 We have not been able to find in any of the literature on the TEL a reflection on how the concept 'economic literacy' is defined or on which alternatives could be considered. Scheer is the only author who indirectly defines economic literacy: "Economic illiteracy is defined as a lack of understanding of how the American economic system functions and a deficient degree of knowledge concerning basic economic concepts and relationships." (L.H. Scheer: Economic Literacy: Goal of Centers for Economic Education. In: Indiana Social Studies Quarterly, Aug. 1974, 27/2, 66-73. Note 1, Page 73).

Item	Form A Mean	Form A Std Dev	Form B Mean	Form B Std Dev
1	3.5	2.2	3.4	2.0
2	4.3	1.8	4.0	2.0
3	2.5	1.4	4.7	2.3
4	3.1	1.2	3.9	2.1
5	3.1	1.6	3.8	2.0
6	3.5	1.7	3.3	2.0
7	3.6	1.9	3.3	1.9
8	4.4	2.1	3.9	1.4
9	2.4	.7	2.9	1.8
10	3.2	1.8	3.0	2.0
11	3.6	2.0	3.1	1.3
12	4.0	1.7	2.9	1.3
13	1.9	1.1	2.2	1.5
14	2.6	1.1	3.7	2.2
15	3.1	1.8	2.5	1.0
16	3.2	1.6	3.0	1.5
17	3.8	2.4	3.6	1.9
18	3.1	1.8	2.9	1.4
19	2.9	1.7	2.7	1.7
20	4.6	1.7	3.1	1.8
21	3.5	1.8	2.9	1.3
22	4.0	2.0	2.7	1.4
23	3.5	2.0	3.1	1.5
24	2.8	1.2	2.9	1.9
25	3.4	1.8	3.3	1.9
26	3.0	2.3	2.3	1.4
27	3.6	1.6	3.3	1.5
28	4.0	1.8	3.0	1.2
29	4.0	1.6	3.2	1.5
30	2.4	1.5	2.4	1.3
31	2.4	1.6	2.9	1.9
32	3.1	1.9	3.4	1.7
33	3.4	1.6	2.6	1.5
34	3.0	1.6	3.0	1.4
35	3.3	1.6	3.4	1.6
36	3.2	1.5	2.8	1.2
37	2.6	1.0	2.8	1.5
38	3.4	1.7	3.0	1.5
39	4.0	1.7	3.4	1.7
40	4.1	1.8	3.2	1.3
41	3.5	1.5	3.0	1.4
42	3.1	1.1	2.7	1.7
43	3.6	1.4	3.8	2.0
44	3.1	1.8	3.4	2.0
45	3.1	2.0	2.8	1.6
46	4.0	2.0	3.8	2.1
Average	3.15	.70	3.3	.77

Tab. 4-2: Ratings of German-speaking experts regarding the question: "How well do the WBT (and the TEL respectively) measure economic literacy?" (1= very good, 7= very bad, 4 = 'mean')

We interpret the data in the following manner:

1. The fact that the total averages with a rating of 3.15 (SD .70) for Form A and 3.3 (SD .77) for Form B lie on the left half of the scale is a positive aspect of the results. On the average the experts agree that the WBT (and therefore the TEL) does measure economic literacy.

2. One unpleasant result, however, are the wide variances on many items (Table 4-2). In some cases they are so great that an arithmetic mean is questionable. That leads one to suspect that there is no unified concept of economic literacy for 18 year-olds among the 31 polled experts.

3. This lack of unification is expressed in another unpleasant finding: only 11 of the 31 German-language university experts are of the opinion that, with the 46 test items, all dimensions of economic literacy which are expected for 18 year-olds are addressed; 20 - more than half - are of the opinion that essential aspects are missing. Without going into more detail, we list here briefly which aspects are missing in the opinion of those who were dissatisfied. The key words give you a rough idea about what German-language experts also think about when they reflect on the concept of economic literacy.

1. Too one-sided (neo-classical) macro-economic orientation

   There are questions lacking on

   + other than market economic systems
   + economic policy/development policy
   + social market economy (soziale Marktwirtschaft)
   + economic structural data / budget / GNP
   + foreign economy / international economic organizations
   + economic history / technological progress
   + economic ethics
   + limits of market economy

2. Too little micro-economic orientation

   There are questions lacking on

   + production, sales / marketing
   + financing / stock exchange
   + types of companies
   + daily problems such as: financial transactions, income tax, social security, rent, purchasing contracts ...
   + finacial ratios (productivity, profitableness, liquidity)

3. Other criticisms

+ the items are too difficult for 18 year-olds
+ questions are obsolete
+ distractors are occasionally not clear
+ irritating repetition of questions
+ mere questioning of definitions
+ no concept of economic literacy recognizable

Tab. 4-3: A brief qualitative overview of the 'essential' weaknesses of the WBT as an instrument for measuring economic literacy.[7]

What does this content criticism make allusion to in as much as it is justified and the experts have not simply overlooked that some of the demands have indeed been met? Does it allude to the question of which kind of economic literacy 18 year-olds **should** have or to the question of whether 18 year-olds **can** have the kind of economic literacy implicitly defined by the TEL or WBT.

As the overview shows, statements can be made concerning both questions. Criticism of the **inherent normative concept** of economic literacy in the TEL clearly dominates and with that, the Master Curriculum Guide is indirectly criticized. This leads to the interesting question of whether American and German-speaking university experts understand the concept of economic literacy differently; however, this is not the place to discuss this question. The only significant question is whether the concept of economic literacy as defined in the WBT is, in principle, appropriate for 18 year-olds.

In view of this question we will rely for the time being on the polled experts' relatively good quantitative ratings mentioned previously (compare Table 4-2).

To repeat, on the average the experts indicate that economic literacy is still acceptably defined by the TEL and the WBT. However, the test has gaps in its content but can, as a whole, still be considered adequately content valid.

Nevertheless, this rating is not sufficient for the purpose to which we aspired: comparing American and German-speaking young people with respect to their economic literacy. If American and German experts rate the content validity of the TEL and the WBT positively, it is not necessary for the two versions to resemble each other. It is theoretically conceivable that the ratings apply to different implicit concepts of economic literacy (Figure 1):

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7 We are not able to show here how the good and poor ratings stand in relationship to the criteria of the experts. We will report on that issue elsewhere.

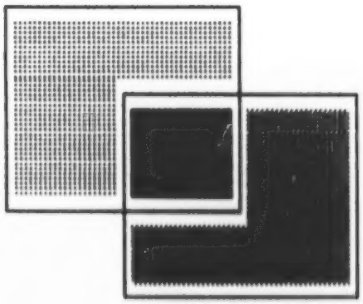

Fig. 4-1: Theoretical (Possible) relationship between the American and the German concept of economic literacy

According to this model American experts rate all the items but German-speaking experts only the items in the intersection positively. Several items are not included in the German-speaking experts' concept of economic literacy. For that reason they rate them negatively. At the same time, they find other dimensions missing which are referred to in Table 4-3.

This is speculation of course; however, the possibility of it being valid can not be ruled out. Therefore, our study had to concentrate on determining if the TEL and the WBT measured in the same way whatever aspect of economic literacy they wanted to measure. The question is then whether the WBT and the TEL measure comparable things.

4.3. Similarity of reactions of American and German-speaking young people to the TEL and the WBT

We assumed that the **similarity of reactions** of American and German-speaking students while working on the TEL or the WBT would give information about whether the TEL and the WBT measured comparable things. Our questions were as follows:

- Are items which are difficult for American students also difficult for German-speaking students?
- Do the items in the TEL and the WBT tend to be answered correctly by strong students and incorrectly by weak students?
- Do the German-speaking students react to the distractors in the same way as the American students?

1. Correlations of Difficuluties in TEL und WBT

	TEL-A	TEL-B
WBT-A	.62 P= o.ooo	
WBT-B		.62 P=o.ooo

2. Correlations of Discrimination in TEL and WBT

	TEL-A	TEL-B
WBT-A	.35 p=.o18	
WBT-B		.40 P=.oo5

Tab. 4-4: Similarity of reactions of American and German-speaking students while working on the TEL or the WBT

Item	Form A	Form B
1	1.00	.80
2	.80	.20
3	1.00	.63
4	.95	.95
5	.80	.80
6	.40	.32
7	.95	1.00
8	.95	.80
9	1.00	.40
10	.80	.83
11	.40	.95
12	.20	.63
13	.80	.80
14	.80	.80
15	.63	1.00
16	1.00	.95
17	1.00	1.00
18	.77	1.00
19	.80	1.00
20	.63	.60
21	.40	.20
22	.40	1.00
23	.80	.80
24	.80	1.00
25	-1.00	.80
26	.63	.95
27	1.00	.95
28	.63	.95
29	.32	.80
30	.95	.80
31	.95	.80
32	-.60	.40
33	.80	.95
34	.63	.40
35	.20	1.00
36	.95	.32
37	1.00	.32
38	.80	.80
39	.40	1.00
40	.80	.20
41	.40	.40
42	.80	1.00
43	.74	.95
44	1.00	1.00
44	.80	.63
46	.32	.80
Average:	0.81	0.90

Tab. 4-5: Average correlations of answer distributions in the TEL and the WBT by item (Kendall's tau)

The tables show that, without a doubt, there is (even before the items were improved) a much more than coincidental similarity between the TEL and the WBT. Nevertheless, are the two versions similar enough for valid cross-cultural comparison or can they become such?

The ideal of identical similarity or 'identical twins' can probably never be attained, yet, which degree of similarity is practically attainable? Is the WBT perhaps already close to a realistic optimum? We have looked thus far without success for an answer to this question from other authors who have translated or adapted tests. We hope to find some clue when we are able to compare the distributions of answers from different groups of students in the USA, as soon as the American raw data are available to us.

We make the following assumption: **The similarity of the reaction patterns** of German and American students should correspond to the similarity of the reaction patterns of different American or different German-speaking students. The variance between the USA and German-speaking countries should come as close as possible to the variance within the USA or the FRG.

Of course, the lack of similarity in the reaction patterns must not lead to the conclusion that the instruments are different. The reverse, however, can lead to the assumption that the instruments are similar if the reaction patterns are similar. The logic becomes clearer in the analyses which we were able to carry out thus far on the German material.

Form A

		Different Groups of German Students				
	TEL-A	1	2	3	4	5
WBT A	.62					
1	.61					
2	.57	.82				
3	.52	.73	.84			
4	.55	.78	.89	97		
5	.57	.82	.98	9o	.92	

Form B

		Different Groups of German Students				
	TEL-B	1	2	3	4	5
WBT B	.62					
1	.58					
2	.64	.89				
3	.65	.71	.85			
4	.64	.78	.89	.97		
5	.59	.82	.98	.90	.92	

Tab. 4-6: Correlations between and within different groups of students in the United States and in German-speaking countries.

The correlation of r .62 between the TEL and the WBT seems pleasantly high, yet in view of the Intracorrelation of the German groups, it appears to us to be in need of improvement.

5. Correlation with external criteria

The correlation of a test with external criteria is the most important criterion for validity. Up to the present time we have not been able to attempt any systematic study of this issue. Nevertheless, within the framework of the analyses carried out thus far, data have been gathered that give initial information about this issue.

The data which we have so far gathered come from German, Austrian and Swiss students who were in groups with different kinds of economic courses.

On the basis of their background, the averages of the German groups should have shown the following distinctions (Table 5-1):

Expectations		Results
Rank	Type of Students	
1.	Universities	yes
2.	Berufsoberschule	yes
3.	Berufsfachschule	yes
4.	Berufsschule	yes
5.	Wirtschaftsschule	yes
6.	Wirtschaftsschule-H.	yes

Rank	Type of Students	
1.	University students in the first term with two economic courses in the high school	yes
2.	with one economic course in the high school	yes
3.	without any economic course in the school	yes

Rank	Type of Students	
1.	University students who reads economic news in the newspaper	yes
2.	University students who don't read economic news in the newspaper	yes

Tab. 5-1: Theoretically expected and actual differences in performance in different groups of students.

Just as the TEL discriminates, as expected, between certain groups of students, so does the WBT correspond to the theoretical expectations to a degree which we never would have dared to hope for.

We are now confident that, by modifying the WBT slightly, we will have an instrument that allows us to carry out valid cross-national comparisons no matter which aspect of economic literacy the instruments measure.

6. A final look at the absolute data

Table 5-1 might be somewhat frustrating since it only gives information about the larger/smaller relationships. In order to reduce any possible frustration, we would like to conclude by filling in some tables with their respective means and adding the little data from the US which we are aware of.

However, we must first mention that, for the work on the adaptation, we administered the test to:

1.351 German, Austrian and Swiss university students who, above all, wanted to become economics teachers

2. 439 German and Austrian high school students with different kinds of courses in economics

The data are certainly not representative and the interpretation of the data requires knowledge of the school systems in Germany and Austria which in comparison to those in the USA are very different. The limited space does not allow a description of the different school systems here. We limit ourselves, therefore, to two findings:

1. First of all, we present the findings on the university students in Table 6-1.

	Adj. Mean	Std Dev
Austria (A)	32.96	5.6
Germany (FRG)	34.01	5.3
Switzerland (CH)	36.89	5.8

Tab. 6-1: Comparison of university students who want to become economics teachers (FRG, CH, A)

2. Secondly, we compare the means of American high school students with courses in economics with the highly tentative (not representative) results of near peer-age students from Germany and Austria also with courses in economics.

Form A	economics hours per week (av)		in... school years	% of curriculum	mean	st.dev.
German students:						
1. Universities					33.26	5.2
2. Berufsoberschule	6	x	2= 12	15,2%	25.92	5.4
3. Berufsfachschule	7	x	2= 14	21,2%	25.28	3.8
4. Berufsschule	6	x	2= 12	40,0%	22.58	6.1
5. Wirtschaftsschule	3,6	x	3= 11	8,6%	14.66	3.9
6. Wirtschaftsschule-H.	5,5	x	2= 11	11,5%	14.57	2.7
Austrian students:	4,4	x	5= 22	13,5%	23.24	5.7
US- Students by Course Type:						
Economics					23,57	8.4
Consumer economics					21.70	7.9
Social studies					22,85	8.7
overall					23.33	8.4

Form B	economics hours per week (av)		in... school years	% of curriculum	mean	st.dev.
German students:						
1. Universities					35.22	5.6
2. Berufsoberschule	6	x	2= 12	15,2%	28.80	5.3
3. Berufsfachschule	7	x	2= 14	21,2%	25.14	2.4
4. Berufsschule	6	x	2= 12	40,0%	22.28	5.9
5. Wirtschaftsschule	3,6	x	3= 11	8,6%	17.04	4.2
6. Wirtschaftsschule-H.	5,5	x	2= 11	11,5%	14.93	3.3
Austrian students:	4,4	x	5= 22	13,5%	27.25	3.8
US- Students by Course Type:						
Economics					25.55	8.9
Consumer economics					18.07	6.9
Social studies					22.14	7.6
overall					23.92	8.8

Tab. 6-2: Comparison of the mean between high school students in US, FRG and A - with economics

The data still indicate almost nothing. However, they stimulate hypotheses and lead one to ask, "How is it really?". We hope we will soon have a valid answer.

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